The Promise and Problems of Organizational Culture: CEO Personality, Culture, and Firm Performance

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Abstract

Studies of organizational culture are almost always based on two assumptions: (1) senior leaders are the prime determinant of the culture, and (2) culture is related to consequential organizational outcomes. Although intuitively reasonable, the evidence for these remains mixed, and almost no research has jointly investigated these assumptions and how they are linked. Using data from more than 1,000 respondents from 32 high technology companies, we examine the effects of CEO personality on organizational culture and the subsequent effects of culture on organizational performance. Results show that CEO personality affects a firm's culture and that culture is subsequently related to a broad set of organizational outcomes including a firm's financial performance (revenue growth, net income, Tobin's Q), reputation, and employee attitudes. We discuss the implications of these findings for future research on organizational culture.

In the late 1970s and early 1980s the topic of "organizational culture" captured managers and scholars interest. A series of poplar books (e.g., Davis, 1984; Deal & Kennedy, 1982; Ouchi, 1981; Peters & Waterman, 1982), academic conferences, and special issues of scholarly journals (*Administrative Science Quarterly*, 1979, 1983; *Journal of Management*, 1985; *Journal of Management Studies*, 1982) highlighted the promise of organizational culture as a way to understand how organizations operate and succeed. The logic offered had two components that were intuitive and seductively simple: (1) cultures largely reflect the values and actions of their senior leaders, and (2) cultures are important determinants of firm performance.

The first premise was that organizational cultures--defined most commonly as "the basic assumptions and beliefs that are shared by organizational members" (Schein, 1985, p. 9), or "a system of shared values defining what is important, and norms, defining appropriate attitudes and behaviors…" (O'Reilly & Chatman, 1996, p. 166)--are largely created by an organization's senior leaders. For example, in the very beginning of his seminal book, Schein (1985) claims that "…*the only thing of real importance that leaders do is to create and manage culture"* (p. 2). He concludes some 300 pages later asserting: "The unique and essential function of leadership is the manipulation of culture" (p. 317). Davis (1984), a consultant for some of the strong culture firms described by Peters and Waterman in their book *In Search of Excellence*, made a similar claim and argued that culture was "invariably set at the top and transmitted down the ranks" (p. 7). The widespread assumption has been that cultures reflect the values, beliefs, and actions of their senior leaders (e.g., Baron & Hannan, 2002; Kotter & Heskett, 1992; Trice & Beyer, 1993).

The second intuitively reasonable part of the argument was that organizational culture was a significant determinant of organizational performance. Initially, the assumption was that culture would have a direct impact on firm performance (e.g., Barney, 1986; Cameron &

Freeman, 1991; Denison, 1984). Studies of this direct linkage were largely inconclusive, however (e.g., Detert, Schroeder, & Mauriel, 2000; Hartnell, Ou, & Kinicki, 2011; Sorensen, 2002) and led to a more nuanced view that recognizes that the culture-performance link needs to reflect an alignment with the firm's strategy and the ability to realign cultures to adapt to changing strategies and market realities (e.g., Chatman, Caldwell, O'Reilly, & Doerr, 2012; Kotter & Heskett, 1992).

Over forty years later, these two fundamental assumptions, with some minor modifications, remain intact and undisputed: Organizational culture is largely shaped by an organization's leaders, and is presumed to be important because it can have consequential effects on firm performance. And, although there have been by some estimates, more than 4,700 studies of culture (Hartnell, et al., 2011) and the specific influence of culture on performance has been debated (e.g., Sorensen, 2002), almost none have attempted to simultaneously test these two assumptions.

Our goal in this paper is to empirically examine the effects of senior leadership personality on organizational culture and the subsequent effects of culture on organizational performance. While some research has looked at each of these relationships separately (leadership-culture and culture-performance), it is critical to examine these assumptions together since, though they are logically connected, we lack clarity about how they are related conceptually and empirically.

We begin by reviewing previous research on the effects of CEO personality and leadership on culture and firm performance. We then use data from more than 1,000 respondents to re-validate a measure of organizational culture originally developed by O'Reilly, Chatman and

Caldwell (1991) and investigate the associations between CEO personality, culture, and firm performance for 32 high-technology firms over a two-year period.

CEO Personality, Leadership, and Organizational Culture

How do senior leaders affect organizational culture? Several authors have identified the mechanisms through which managers might develop and change cultures. O'Reilly and Chatman (1996) define culture as a social control system based on norms and values. As such, they argue that the mechanisms for developing and changing culture can be seen in the social-psychological processes of normative and informational influence (e.g., Cialdini, 1993). Leaders shape culture through consistent signals, systems of involvement that promote commitment, vivid illustrations of normatively appropriate or inappropriate behaviors, and the provision of rewards, both formal and informal, to reinforce the desired attitudes and behaviors.

Schein (1985) and others have suggested similar mechanisms that act to signal the desired normative order, including systems, structures, and processes designed to reinforce ways of thinking and behaving (e.g., Higgins & McAllister, 2002; Kotter & Heskett, 1992). While useful, these do not answer the question of where the desired behavioral regularities come from. Several scholars have suggested that the true origins of culture can be found in the fundamental dispositions (values and personalities) of the organizations' leaders (Deal & Kennedy, 1982; Schein, 1985). In this sense, leaders' values and personalities may be the building blocks of organizational culture (Baron & Hannan, 2002; Detert, Schroeder & Mauriel, 2000; Fu, Tsui, Liu, & Li, 2010).[1]

[1] We use the term "values and personality" here since a number of studies of CEOs have used "values" rather than personality. As Parks and Guay (2009) note, the two constructs are similar in that they both influence behavior through habitual routines. They are different in that "values" are more learned and normative than personality. Previous research has often made little distinction between the two.

Personality traits are patterns of thought, emotion, and behavior that are relatively consistent over time and across situations. They describe behavioral regularities and can be described with familiar words such as “reliable” or “cheerful” as well as more specialized terms such as “narcissistic” or “conscientious.” Similar to personality, values are enduring subjective judgments or perspectives on what is seen as important that reflect basic dispositions (Rokeach, 1973). Values represent one translation of dispositions into situational preferences (Parks & Guay, 2009). For example, the personality trait of extraversion predisposes a person to be outgoing and gregarious. This disposition may also cause an extraverted individual to value or prefer situations that permit social interaction. As such, personality and values are important precursors of patterns of behavior, situation selection, and person-situation congruence (Meglino & Ravlin, 1998).

During the past several decades, an impressive body of research has accumulated providing convincing evidence that (a) personality and values can be assessed with great accuracy (e.g., Funder, 2012; John, Naumann & Soto, 2008; Mount, Barrick & Strauss, 1994), (b) values and personality are related to a range of important individual and life outcomes including physical and psychological health, identity, relationships, occupational choice, job satisfaction, performance, political ideology, and criminal activity (e.g., Barrick & Mount, 1991; Judge, Higgins, Thoresen, & Barrick, 1999; Ozer & Benet-Martinez, 2006), and (c) the myriad of potential personality and value constructs can be reliably captured by five essential personality constructs, the so-called Big Five or the Five Factor Model (FFM), that integrates decades of earlier research (e.g., Goldberg, 1990; John & Srivastava, 1999; McCrae & Costa, 1987). In a comprehensive review of this research, John, Naumann and Soto (2008) conclude: “After decades of research, the field has now achieved an initial consensus on a general taxonomy of

personality traits, the 'Big Five' personality dimensions" (p. 116). The five underlying dimensions (see Figure 1) include; (1) *Extraversion* which is characterized by sociability, assertiveness, energy, and optimism; (2) *Agreeableness* which includes the tendency to be trusting, cooperative, caring, and kind; (3) *Conscientiousness* which comprises two dimensions--achievement and dependability--and is characterized by the propensity to be deliberate, self-disciplined, well-organized, and hard-working ; (4) *Neuroticism* which represents the tendency to exhibit poor emotional adjustment and to experience negative affect, such as anxiety, insecurity and hostility; and (5) *Openness to Experience* which is the disposition to be imaginative, nonconventional, insightful and autonomous. These five dimensions serve as an important integrative framework for understanding and integrating the research on personality.

Insert Figure 1 about here

In the past two decades, thousands of publications have related the Big 5 to career success (e.g., Judge, et al., 1999; Seibert & Kraimer, 2001), job performance (e.g., Barrick & Mount; 1991; Hurtz & Donovan, 2000; Mount, Barrick, & Stewart, 1998), and leadership (e.g., Hoffman & Jones, 2005; Judge & Bono, 2000). Overall, these studies, including meta-analyses, confirm the relationship between personality and consequential individual outcomes. For instance, Soldz and Vaillant (1999) followed 163 men over a 45-year period and reported that three Big 5 traits (neuroticism, extraversion, and openness) exhibited significant correlations with life events over this time. Caspi, Roberts, and Shiner (2005) reviewed evidence showing that the Big 5 were related to both a person's health and longevity. Karney and Bradbury (1995) linked Big 5 measures to relationship outcomes such as conflict, abuse and dissolution.

Of more relevance for organizational research, a number of studies have linked Big 5 dimensions to job performance. In a meta-analysis of 25 studies, Mount, Barrick, and Stewart (1998) concluded that conscientiousness, agreeableness, and emotional stability are positively related to performance in jobs requiring interpersonal interactions. Agreeableness and emotional stability are more strongly related to performance in jobs that involve teamwork than in those that rely more on dyadic interaction. In a 50-year longitudinal study of career success, Judge and his colleagues (Judge, et al., 1999) found that subjects high on conscientiousness and low on neuroticism reported more career success (intrinsic and extrinsic), suggesting the strong, enduring effects of personality.

Aside from studies of job performance, a number of studies have explored the relationship of the Big 5 attributes and leadership. For example, several studies have demonstrated that organizations' modal personality profiles (assessed with the Big 5) are congruent with their leader's profiles (Giberson, Resnick, & Dickson, 2005; Hoffmann & Jones, 2005), suggesting that a leader's personality may affect the organization's culture. Other studies have linked Big 5 dimensions to transformational leadership (e.g., De Hoogh, Den Hartog, & Koopman, 2005). For instance, in a study of 156 managers, Crant and Bateman (2000) found that managers who were more extraverted were also seen by their supervisors as more charismatic. In a meta-analytic review of 78 studies, Judge, Bono, Ilies, and Gerhardt (2002) found four of the Big 5 (extraversion, conscientiousness, neuroticism, and openness to experience) to be related to ratings of leadership, and concluded that the Big 5 model has been supported in hundreds of studies and "is a fruitful basis for examining the dispositional predictors of leadership" (p. 773). However, in a subsequent review of 26 studies linking the Big 5 to transformational leadership Bono and Judge (2004) reported only weak results and speculated that most previous studies of

leadership had focused more on leader emergence and laboratory studies but when the focus was on senior leaders and more specific behaviors, dispositions were less useful as predictors. A more recent meta-analysis of 187 studies (Hoffman, Woehr, Maldagen-Youngblood, & Lyons, 2011) supported this conclusion and noted that the Big 5 dimensions were more strongly related to leader effectiveness for low-level managers than for those at higher levels.

Although the evidence linking the Big 5 to senior leader effectiveness is modest, a number of researchers have explored how leader personality might affect other aspects of organizational functioning. For example, in an archival study of 17 CEOs Peterson and his colleagues (Peterson, Smith, Matorama, & Owens, 2003) investigated how the personality of the CEO affected the dynamics of the senior team. Based on ratings of both personality and team dynamics coded from published books and articles and using canonical correlation, they found that Big 5 attributes were related to team dynamics. For instance, CEOs higher on agreeableness had teams rated as higher in cohesion and decentralization. However, because canonical correlation does not permit the precise testing of specific hypotheses, these results suggest a link between CEO personality and team functioning but are not definitive.

In a more direct test of the association of CEO personality and organizational culture, Giberson and his coauthors (Giberson, Resick, Dickson, Mitchelson, Randall, & Clark, 2009) collected data from 32 organizations. Using the Competing Values Framework (Quinn & Rohrbaugh, 1983), they linked the Big 5 to the four archetypal cultures assessed in the CVF--clan, adhocracy, market, and hierarchy--and found that certain CEO traits were significantly related to these cultures. For instance, CEOs who were higher on openness and extraversion were associated with hierarchical cultures. Those who were higher on agreeableness, neuroticism and extraversion were linked to clan cultures. Again, these results are suggestive but not definitive.

Although widely used to assess culture, there is a concern that the four cultural archetypes assessed in the CVF may not be broad enough to accurately capture the cultures across a wide range of organizations. In an extensive meta-analysis of this research Hartnell, Ou, and Kinicki (2011) conclude that their results "suggest that identifying 'dominant culture' types may be of limited utility because they do not account for culture's bandwidth" (P. 687).

To explore the linkages between CEO values, culture, and firm performance, Berson, Oreg, and Dvir (2007) collected data from 26 CEOs and 256 of their subordinates. Their results showed that CEO values were associated both with characteristic cultures and subsequent performance. They focused on three CEO values (self-direction, security, and benevolence) and showed that these values were associated with different cultures (innovation-oriented, bureaucratic, and supportive). Interestingly, the differing cultures were significantly related to firm outcomes. More innovative cultures had higher sales growth; more bureaucratic cultures were more efficient; and more supportive cultures had higher levels of employee satisfaction but lower sales growth.

While not definitive, the evidence suggests that personality as manifested in values and behavior is associated with leadership at the CEO level (Peterson, et al., 2003; Tsui, Zhang, Wang, Xin & Wu, 2006) and that these leader attributes may affect the culture of the organization (Berson, et al., 2007; Giberson, et al., 2009), although the specific form of these relationships is not clear. One implication of this argument is that an organization's most senior leaders, and particularly its CEO, are in a unique position to set the social context for members and thereby determine the culture**.** This may be among the more powerful ways leaders affect organizations (Podolny, Khurana & Popper, 2005) and runs counter to the idea that culture is a social construct created by many individuals and their behavioral patterns (e.g., Martin, 1992).

This perspective suggests that senior leaders, because of their salience, responsibility, authority and presumed status, have a disproportionate impact on culture, one unrivaled by any other single individual and may be a significant source of cultural influence.

Organizational Culture and Firm Performance

Given the widespread interest in the potential effects of culture on firm performance, it is noteworthy how little clarity there is about this effect, leading Gregory, Harris, Armenakis and Shook (2009) to observe that "few empirical studies have provided detailed insight into the relationship" (p. 673). Chatman and her colleagues (Chatman, et al., 2012) echoed this conclusion: "One of the most important yet least understood questions is how organizational culture relates to organizational performance" (p. 2). There are several understandable reasons for this lack of clarity. First, designing studies and obtaining data that allow for the assessment of culture across organizations, especially with the CEO's participation, has been a daunting task, often resulting in studies with very small samples and low power (e.g., Calori & Sarnin, 1991; Gordon & DiTomaso, 1992). Some studies are essentially case studies or use small heterogeneous convenience samples that make generalization of results difficult (e.g., Ogbonna & Harris, 2002). For example, Denison and Mishra (1995) used archival data on five firms to develop a theory of culture and then used survey data in an attempt to refine their theory. While useful, they acknowledge: "Neither the survey instrument nor the traits operationalized were ideal for culture research" (p. 207). In a similar vein, other researchers have made use of pre-existing surveys that were not designed for culture research but, post hoc, re-labeled the constructs as "culture" (e.g., Denison, 2004; Den Hartog & Verburg, 2004; Marcoulides & Heck, 1993). Further compounding the issue is that the relationship between culture and firm performance has been shown to vary across industries (e.g., Christensen & Gordon, 1999) such

that a significant result obtained in one setting may not apply in another. This is not to criticize these efforts but to simply note the difficulty that culture research poses.

Second, there have been disagreements about the definition and measurement of culture and performance that has resulted in the use of different frameworks and metrics that make aggregation of results difficult (e.g., Rousseau, 1990). One culture framework that has been used in many studies is that of the Competing Values Framework (CVF) developed by Quinn and his colleagues (e.g., Quinn & Rohrbaugh, 1983; Quinn & Spreitzer, 1999). The CVF proposes that all organizational cultures can be described along two orthogonal dimensions (internal/external focus and stability/flexibility). These result in four archetypal cultures: clan, adhocracy, hierarchy and market[2]. Based on this framework, Hartnell, Ou, and Kinicki (2011) identified 84 studies and conducted a meta-analysis of culture and effectiveness broadly defined. Consistent with previous studies, they found culture to be significantly related to employee attitudes (e.g., Cameron & Freeman, 1991; Gregory, et al., 2009) but obtained only mixed support when objective measures of effectiveness were used. They concluded that while at a broad level there was evidence that culture types were associated with organizational effectiveness, but they had questions about how independent the culture types were such that rather than being competing they may be complementary. They suggest that imposing a researcher-defined framework as suitable for all cultures may miss important attributes of the real culture in any particular organization. In one of the first published papers on organizational culture, Andrew Pettigrew (1979) offered a similar caution against simple categorizations, “While providing a general sense of orientation, culture treated as a unitary concept in this way lacks analytical bite” (p. 574).

[2]Denison and Mishra (1995) use equivalent orthogonal factors but different labels for the types of archetypal cultures: involvement, adaptability, mission, and consistency.

A more variegated and comprehensive approach to developing a framework for categorizing organizational culture was developed by O'Reilly, Chatman, and Caldwell (1991). Just as the Big Five personality attributes represent a mid-range theory of personality (John & Srivastava, 1999), the Organizational Culture Profile was designed to reflect a more comprehensive set of attributes and their interrelationships to accurately reflect the complexity, uniqueness, variety, and range of an organization's culture (e.g., Chatman, 1989). O'Reilly and his colleagues (O'Reilly, 1991) began by defining a universe of more than 100 possible norm and value statements that might be used describe an organization's culture. Using large samples and a factor-analytic approach, they empirically identified a set of eight factors that could be used to comprehensively describe the organization's culture. In this approach, data from organizational respondents are collected and used to characterize the culture of an organization in a comprehensive way. This approach, the Organizational Culture Profile (OCP), has been refined and validated by several researchers (e.g., Barber & Wesson, 1998; Chatman, et al., 2012; Chatman & Jehn, 1994; Judge & Cable, 1997; Sarros, Gray, Dentsen, & Cooper, 2005; Siew & Yu, 2004)[3]. Just as the Big 5 provide a framework for summarizing the effects of personality, the OCP offers a comprehensive way to summarize potential organizational cultures. The seven OCP dimensions are shown in Figure 2.

Insert Figure 2 about here

Finally, there has been an evolution in understanding the form that the relationship between firm culture and performance might take, ranging from a simple direct association to contingent relationships dependent on firm strategy and environmental conditions (e.g.,

[3]A separate qualitative review also identified eight dimensions that appear isomorphic to the OCP factors (Detert, Schroeder, & Mauriel, 2000).

Chatman, et al., 2012; Sorensen, 2002). The initial qualitative studies of culture suggested a direct association between culture and firm performance (e.g., Deal & Kennedy, 1982; Wilkins & Ouchi, 1983) but results from early quantitative studies were mixed. For example, Denison (1984) found associations between what he categorized as culture and firm ROI, but Gordon (1985) found no associations with either profitability or growth. Subsequent studies also provided little support for a direct association between culture and firm performance (e.g., Cameron & Freeman, 1991; Christensen & Gordon, 1999; Denson & Mishra, 1995; Gordon & DiTomaso, 1992; Siehl & Martin, 1990) and led Kotter and Heskett (1992) to conclude: "Although it is widely believed that strong cultures create excellent performance, we have found that the recent experiences of nearly 200 firms do not support that theory" (p. 141).

A second wave of research concluded that a strong organizational culture might be linked to performance in stable environments but not be advantageous in more dynamic conditions (Sorensen, 2002; Van den Steen, 2005). Recent research has adopted a more nuanced approach, however, and shown that when cultures emphasize a strong norm of adaptability, they promote performance even in dynamic environments (Chatman, et al., 2012; Khazanchi, Lewis, & Boyer, 2007; Tellis, Prabhu & Chandy, 2009). Research on organizational ambidexterity has furthered this argument by demonstrating that the strategy-culture alignment needed for exploitative businesses is different than that required in more exploratory ventures, and that successful organizations are often characterized by both (O'Reilly & Tushman, 2008; Raisch & Birkenshaw, 2008).

While the strong intuition was that organizational culture should be directly linked to firm effectiveness, the empirical results are equivocal. Several studies show that culture is associated with employee attitudes (e.g., Cameron & Freeman, 1991; Fu, et al., 2010) but the

relationship between organizational culture and performance is less clear and suggests the need to more carefully specify the conditions under which associations are likely to occur (Berson, et al., 2007). In the next section we provide a set of hypotheses suggesting how CEO personality may be associated with organizational culture and how culture may be linked to firm performance.

Hypotheses

The argument proposed thus far is that a leader's personality is manifested in regularities in attitudes and behaviors. Although there is no expectation that a CEO's personality should directly affect their firm's performance, their patterns of behavior (expressed in what questions they ask, what they pay attention to and reward, how they respond to critical incidents, and what types of systems and processes they prefer) shape their firm's cultures (e.g., what people pay attention to, what behaviors are seen as important, how people interact with each other). Once established, culture, acting as a social control system, may then help or hinder the execution of strategy and affect firm performance (Tushman & O'Reilly, 2002). Thus, we expect that certain CEO personality attributes, expressed in terms of the Big 5, may be associated with certain types of organizational culture, as characterized by the Organizational Culture Profile. These culture factors may, in turn, be associated with firm performance over time. In contrast to studies that link leader personality to perceptions of leader effectiveness (e.g., Judge et al., 2002), we are not focused on whether the leader is perceived of as effective. Instead, we focus on a potentially more pervasive type of influence which is that leaders shape their organizations' culture, establishing a significant source of social control which may have a more lasting and fundamental impact on followers' behavior than most research on effective leadership suggests (O'Reilly & Chatman, 1996).

Linking CEO Personality and Organizational Culture

CEO Extraversion – The most obvious aspect of extraversion is the propensity to prefer extensive interactions with others. However, extraverts are also characterized by optimism, energy and a preference for excitement (e.g., Costa & McCrae, 1992; Judge et al, 2002). In contrast, those low in extraversion are less interested in interpersonal interactions and may be seen as timid and withdrawn. Thus, we expect that CEOs who exude energy, optimism, and friendliness are likely to create cultures that emphasize results and foster collaboration.

> *Hypothesis 1:* CEOs who are higher on extraversion will be more likely to be associated with cultures that are (a) more results oriented, and (b) more collaborative.

CEO Agreeableness – Individuals high on agreeableness are typically seen as modest, helpful, and willing to compromise (e.g., Hogan, Curphy, & Hogan, 1994; Petersen, et al., 2003). They tend to trust others and not challenge them. People who are low on agreeableness are more competitive than cooperative and can be seen as skeptical and antagonistic. Because CEOs who are high on agreeableness are more willing to compromise and avoid conflict, we predict that their organizations will have cultures that are more collaborative and less results-oriented. More formally, we predict:

> *Hypothesis 2:* CEOs who are higher on agreeableness will be more likely to be associated with cultures that are (a) more collaborative and (b) less results-oriented.

CEO Conscientiousness – Conscientiousness refers to the tendency to control impulses and tenaciously pursue goals. People high on this dimension are hard-working, practical, and persistent as well as orderly and reliable (Judge & Bono, 2000). People who are low on conscientiousness tend to be more spontaneous, less constrained, and less achievement-oriented. We expect that leaders who are high on conscientiousness will be more likely to be associated with cultures that are detail-oriented, results-oriented and higher on integrity.

Hypothesis 3: CEOs who are higher on conscientiousness will be more likely to be associated with cultures that (a) are more detail-oriented, (b) are more results-oriented, and (c) place a higher emphasis on integrity.

CEO Neuroticism – People who score high on neuroticism tend to be emotionally unstable and upset by minor threats or frustrations. They are prone to anxiety, embarrassment, self-doubt, and guilt. This often makes them fearful of new situations and susceptible to feelings of dependence. They are sometimes described as submissive and indecisive (Lim & Ployhart, 2004). Those who are low on neuroticism are seen as emotionally stable, relaxed, and secure. Because of this, leaders who score high on this dimension are seen as more likely to be associated with cultures that are less results-oriented and less collaborative. Thus, we predict that:

Hypothesis 4: CEOs who are higher on neuroticism will be more likely to be associated with cultures that are (a) less results-oriented and (b) less collaborative.

CEO Openness to Experience –Openness to experience is the tendency to be imaginative, unconventional, and independent. People high on this dimension are described as insightful, comfortable with new ideas, curious, and resourceful. People who are low in this regard are seen as unimaginative, conservative, and resistant to change (Bono & Judge, 2004). We expect that leaders who are high on openness to be more likely to lead cultures that are more adaptable and innovative and less concerned about details, and we predict that:.

Hypothesis 5: CEOs who are higher on openness to experience will be more likely to be associated with cultures that are (a) more adaptable and (b) less detail-oriented.

Organizational Culture and Firm Effectiveness

As we discussed earlier, the association of culture and performance is not straightforward and likely to be contingent on the firm's strategy, the degree to which the culture promotes adaptability, and how widely shared and strongly felt the culture is (Chatman, et al., 2012). In

this sense, although the Organizational Culture Profile has the advantage of identifying a comprehensive set of cultural dimensions, there is no guarantee that any particular dimension will be relevant for a particular firm. For instance, the OCP identifies transparency and integrity as possible cultural dimensions. However, whether these would be related to firm performance would depend importantly on the specific circumstances and strategy of a company. A culture that emphasizes integrity and transparency might, for example, be important for the stock market valuation of a firm in an industry where their competitors have been characterized by fraud (e.g., Greve, Palmer, & Pozner, 2010). But these same dimensions might be irrelevant in an industry where fraud is unknown. That said, four of the seven OCP cultural dimensions seem broadly related to short-term financial performance regardless of the specific strategy adopted. First, as previous research has shown, adaptability appears to a critical cultural element in promoting firm performance (e.g., Chatman, et al., 2012; Kotter & Heskett, 1992; Tellis, et al., 2009). Second, and related, a focus on customers and their needs also appears generally useful regardless of the strategy a firm pursues (e.g., Bueschgens, Bausch & Balkin, 2010; Deshpande, Farley, & Webster, 1993). Finally, firms that are more results-oriented and pay closer attention to details are more likely to perform well when compared to those that do not, especially in mature and competitive markets (e.g., Khazanchi, et al., 2007). This suggests the following four hypotheses:

> *Hypothesis 6:* Organizations whose cultures emphasize adaptability more will perform better than those who emphasize adaptability less.
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> *Hypothesis 7:* Organizations whose cultures emphasize customers more will perform better than those who emphasize customers less.
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> *Hypothesis 8:* Organizations whose cultures emphasize results more will perform better than those who emphasize results less.
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> *Hypothesis 9:* Organizations whose cultures emphasize detail more will perform better than those who emphasize detail less.

METHOD

Research Design and Sample

There were two steps in our research design. First, in order to assess the culture in our sample organizations we updated the Organizational Culture Profile (OCP) (O'Reilly, et al., 1991). This involved collecting data in 2009 from a set of large publicly traded high-technology firms headquartered in the U.S. (n=54 firms with 835 respondents) and a smaller set of similar but privately held high-technology firms headquartered in Ireland (n=22 firms with 198 respondents). These data were used to identify specific dimensions of organizational culture that can characterize an organization. Second, using a subset of the U.S. sample that met our sampling criteria, we also collected data on CEO personality as rated by company employees (e.g., Mount, Barrick & Strauss, 1994) and firm performance for 2010 and 2011 and used these to test hypotheses about CEO personality, culture, and firm effectiveness.

U.S. Firm Sample. We identified 60 firms to participate in this study using the following criteria: The firms were publicly traded, U.S.-headquartered, had their primary operations in the high-technology sector (hardware, software, internet services - SIC 35xx, 36xx, 38xx, 73xx; GIC Sector 45; S&P Economic Sector 940), and concurrently employed a minimum of 20 alumni from three focal West Coast business schools.

Alumni of these business schools provided culture assessments of their employing organizations using the revised OCP. In fall 2009, we sent prospective informants an email inviting them to participate in an online survey assessing their organization's current culture. We specified that informants' culture assessment responses were confidential and would not be identified to their employers, and that the study results would not identify their organizations by name. We received a total of 835 culture assessments from informants in 54 of the 60 firms, and

we included those responses in the factor analysis described below. Eighty-nine percent of the 54 firms are included in the list of the *Fortune 1000,* representing the largest American firms, and collectively they generated 75% of the total revenue from high-technology *Fortune 1000* firms in 2009. Twenty-eight percent of the informants were female and their average tenure with the focal firm was 7.23 years, with 24% having worked at their focal firm for more than 12 years. All had earned a Bachelor's degree or higher and seventy-four percent of informants had earned an MBA.

Irish Firm Sample. To broaden the sample of organizations used in assessing culture dimensions in technology firms, we invited 22 high-technology firms headquartered in Ireland to participate in the study. The firms ranged in size from 25 to more than 2,000 employees ($\underline{x}$ = 304.3, s.d. = 480.8) and in age from 7 to 64 years ($\underline{x}$ = 27.1, s.d. = 17.9). We obtained contact information for employees who had been with the firm at least two years from a senior executive in each firm. Of the 229 employees invited to serve as organizational informants (using a similar email as for the U.S. firm sample), 198 (86%) completed the OCP assessment for their firm. Twenty-one percent were female; the average tenure was six years at the focal firm ($\underline{x}$ = 5.89, s.d.= 3.28); 12% had worked at the firm for more than 12 years; and 17% had MBA degrees (72% had BA/BS equivalents or higher). These responses were combined with those from the U.S. sample for exploring the dimensions of culture.

Independent Variables

The OCP uses a profile comparison approach based on a Q-sort method to provide a quantitative, semi-idiographic assessment of an organization's culture. The OCP consists of 54 norm statements (e.g., fast-moving, being precise) that emerged from a review of academic- and practitioner-oriented writings on culture and were selected to provide a wide-ranging and

inclusive set of descriptors (e.g., O'Reilly, et al., 1991). In the two decades since the development of the original OCP item set, a variety of business and environmental factors have affected the salient aspects of organizations' cultures (e.g., Judge & Cable, 1997; Sarros, Gray, Densten, & Cooper, 2005). Obvious examples include shifts in customer service models (e.g., Berman, 2011) and financial failures (e.g., Gasparino, 2009). Therefore, we modified or replaced 16 of the original items to make the item set more timely, relevant, and comprehensive. We retained the 54-item distribution structure and deleted original items that were highly redundant, did not discriminate in past research, or did not load cleanly on the OCP factor structure, replacing them with new or modified items. We then conducted factor analyses, described below, to identify the underlying culture dimensions measured by the OCP.

The email invitation sent to informants included a link to the online OCP assessment. Informants were presented with a definition of culture ("those things that are valued and rewarded within your company – that is, the pattern of beliefs and expectations shared by members, and their resulting behaviors"). They were then prompted to sort the 54 value statements that are *most characteristic and uncharacteristic of your organization's culture* by assigning them into one of nine categories labeled from 1 = "Most Uncharacteristic" to 9 = "Most Characteristic," placing fewer items in the extreme and more items in the middle categories. (The required distribution was 2-4-6-9-12-9-6-4-2.)

Culture Dimensions. Consistent with the processes used in developing the original OCP, we conducted a principal components analysis with varimax rotation to derive the factor structure of the revised OCP (n=1,033). We began the principal components analysis with all 54 items and eliminated items that loaded on a single-item factor or loaded highly on more than one factor. We derived a seven-factor solution including 43 of the OCP items that explained 43

percent of the total variance. All of the final items loaded above .40 on one factor and had cross-loadings on other factors of less than .30. The seven-factor solution was readily interpretable and consistent with a scree plot. Each factor had an eigenvalue over 1.0. The seven factors were labeled Adaptability, Collaborative, Results-Oriented, Integrity, Customer-Oriented, Detail-Oriented, and Transparency. These factors overlap substantially with the original factor analyses of the OCP (O'Reilly, et al., 1991), with the differences between the old and new dimensions primarily being attributable to the modified items (e.g., customer-oriented, transparency). Table 1 shows the rotated component matrix including each item's factor loadings.

Insert Table 1 Here

We derived orthogonal factor scores for the seven factors for each informant. Culture profiles for the firms in the final sample were created by averaging the factor scores across informants within each firm on each of the seven factors. Thus, each firm is measured on seven independent attributes of culture. We measured the intensity with which an organization held each norm by averaging informants' standardized factor score on that dimension within each firm. We used these firm-level measures for all subsequent analyses.

CEO Personality. To assess CEO personality, we administered the Ten-Item Personality Inventory (TIPI) which assesses personality using the Big Five Model (or Five-Factor Model). This instrument was developed by Gosling, Rentfrow, and Swann (2003) and has been shown to be reliable and valid (e.g., Erhardt, Erhardt, Roesch, Nadler, & Bradshaw, 2009; Muck, Hell, & Gosling, 2007). Previous research has suggested that the accuracy of observers' ratings of personality is higher than self-assessments (Funder, 2012; Mount, Barrick, & Strauss, 1994) and that observers are able to make these assessments easily (Lievens, DeFruyt, & Van Dam, 2001).

In Spring 2011, we contacted the 648 respondents (current employees at 32 high-tech firms) who had participated in our Fall 2009 culture survey. Of these 648, 250 individuals completed a follow-up survey asking them to assess their CEO's personality (39% response rate). For three of the firms, fewer than five current employees responded . Thus we analyzed data on 29 firms and from 246 informants. The demographic profile of CEO personality informants is very similar to that of the culture informants. Thirty-four percent were female and their average tenure with the focal firm was 7.19 years, with 25% having worked at their focal firm for more than 12 years. All had earned a Bachelor's degree or higher and sixty-nine percent of informants had earned an MBA. We therefore have an average of 8.48 informants per CEO personality assessment (s.d. = 4.73; range = 5-25).

To determine the appropriateness of grouping the personality ratings by company, we conducted a within-and-between analysis (WABA). WABA assesses variation and covariation in variables between and within levels of analysis (Dansereau, Alutto, & Yammarino, 1984). The E- and F-test values indicate highly significant between-group variation (vs. within-group variation) on all five of the Big 5 personality traits (Extraversion: $E=1.11$, $F=9.48$, $p<0.001$; Agreeableness: $E=1.28$, $F=12.66$, $p<0.001$; Conscientiousness: $E=1.12$, $F=9.34$, $p<0.001$; Emotionality: $E=1.06$, $F=8.72$, $p<0.001$; Openness: $E=1.26$, $F=11.14$, $p<0.001$).

Firm Performance

One of the difficulties in making sense of previous research on organizational culture and firm performance is the lack of standardization and comparability across dependent variables. Therefore, for this study we assessed firm performance using three separate dimensions. First we collected financial performance metrics (revenues, net income, and Tobin's Q) for the two years after the culture data were collected. Second, because external perceptions of a firm can be a

valuable intangible resource (Barney, 1991), we used the 2010 *Fortune Magazine* "Most Admired" ranking as an indicator of firm reputation. Finally, to investigate the association of organizational culture and employee attitudes, we used employee ratings of their firm for 2010 as reported by the website Glassdoor.

Change in Financial Performance. Each firm's total revenue ($\underline{x}$= $33,915 MM, s.d.= $43509 MM) and net income ($\underline{x}$= $4705 MM, s.d.= $6730 MM) for the 2011 fiscal year (FY2011) were obtained from Compustat North America Financials Annual. These indicators represent a firm's ability to generate sales and make effective use of resources. In models predicting financial outcomes, the equivalent 2009 metric was included in the model as we were interested in changes in performance. We conducted the analyses using both logged versions of the dollar-value for revenues. Since net income was, in some instances, negative, we used dollar-values for this variable.

Tobin's Q. Tobin's Q is the ratio of the market value of a firm's assets (stock market value) compared to the book value. It is a widely used measure of the future value of a firm as perceived by the stock market.

Glassdoor Ratings. Glassdoor is a website that uses anonymous employee comments and ratings (on a five point scale) to rate employee satisfaction with the company (www.glassdoor.com). We obtained overall ratings for each of the 32 firms in our sample ($\underline{x}$=3.23, s.d.=0.41, range 2.40-4.0). The number of employees rating each company ranged from 64 to more than 5,000 ($\underline{x}$=1,038).

Corporate Reputation. We assessed corporate reputation using the 2010 *Fortune Magazine* "Most Admired" ranking (Bernasek, 2010). We use the inverse value of a firm's rank such that higher numbers represent a better reputation. The *Fortune* surveys were conducted by

polling 4,170 executives, directors, and securities analysts who work at 667 companies within the 10 largest U.S. industries. For the "Most Admired" ranking, respondents selected the 10 companies they admired most from a list of the companies that ranked in the top 25% in the prior year's survey, plus the top 20% of their own industry ($\underline{x}$=8.41, s.d.=16.81).

Control Variables

We controlled for a set of variables that could influence culture and performance. First, even though the sample firms were in the high-technology industry, we identified each firm's sector as software, hardware, or a combination, using SIC codes, from Compustat North America. Firms with SIC 35xx (Industrial and Commercial Machinery and Computers), 36xx (Electrical and Electronic Equipment Except Computers), or 38xx (Instruments and Related Products) were coded as Hardware (variable "SW" = 0), whereas those with SIC 73xx (Business Services) were coded as Software (variable "SW" = 1). To determine whether a company was involved in a mixture of hardware- and software-oriented production, each company's fiscal year 2009 business segments (as reported in the 10-K) were analyzed. Companies that derived more than one-third of their revenue from their non-primary sector (as determined by SIC) were coded as Mixed (variable "HWSW Mix" = 1).

We also controlled for firm size using the log of the number of employees in fiscal year 2009, gathered from Compustat North America. We included two indicators of firm age in our initial regression equations: number of years since founding and number of years since going public, gathered from company reports and SEC filings; however, we dropped these indicators because they never changed our results and were highly correlated with firm size.

Results

Table 2 reports the associations between CEO personality and the seven culture dimensions derived from the OCP. First, and consistent with previous research demonstrating that there are industry-based variations in organizational cultures (e.g., Chatman & Jehn, 1994; Christensen & Gordon, 1999; Siew & Yu, 2004), there are differences in culture across firms depending on their market segment. Firms that compete in both hardware and software are less collaborative and more detail- and results-oriented than firms that compete in a single market segment.

Insert Tables 2 and 3 about here

After controlling for these differences and firm size, the results reveal a number of significant relationships between CEO personality and firm culture, providing support for the general hypothesis that variations in CEO personalities will be associated with differences in organizational culture. More specifically, the results confirm several of the specific hypotheses. First, as proposed in Hypothesis 1a, CEOs who were more extraverted (gregarious, assertive, active) had cultures that were more results-oriented. Consistent with Hypothesis 2a, more agreeable CEOs (trusting, compliant, compassionate) were associated with less results-oriented cultures. CEOs who were more conscientious (orderly, disciplined, achievement-oriented) had cultures that were more detail-oriented (Hypothesis 3a). Also consistent with Hypothesis 4a, CEOs who were higher on neuroticism and less emotionally stable were more likely to have cultures that were less results-oriented. Finally, Hypothesis 5a proposed that CEOs who were higher on openness to experience (ready to challenge convention, imaginative, willing to try new activities) would be more likely to have cultures that emphasized adaptability. This was

confirmed, but CEOs who were higher on openness did not also have cultures that were less detail-oriented (5b).

The results in Table 2 also failed to confirm several of the hypotheses. Specifically, there was no evidence that CEOs who were more extraverted would engender more collaborative cultures (Hypothesis 1b); CEOs who were more agreeable would be associated with more customer-oriented cultures (Hypothesis 2b); CEOs who were more conscientious would have more results-oriented cultures and with higher integrity (Hypothesis 3b); CEOs who were more neurotic would have less collaborative cultures (Hypothesis 4b); or that CEOs who were more open would have more cultures with less detail-orientation (Hypothesis 5b). In this sense, there is mixed support for the hypotheses. Taken in their entirety, however, the results do show significant relationships between CEO personality and three of the seven cultural dimensions. Cultures that are more adaptive have CEOs who are more open to experience. Results-oriented cultures are positively associated with CEOs who are more extraverted and negatively related to CEO agreeableness and neuroticism. Finally, more detail-oriented cultures are associated with CEOs who are more conscientious. Interestingly, no associations between CEO personality and the culture dimensions of collaboration, transparency, or integrity were found.

Table 3 reports the results of hierarchical regressions and show the relationships among the culture dimensions and six measures of firm performance after controlling for CEO personality. Each of the culture dimensions, assessed in 2009, is significantly related to at least one subsequent measure of firm financial performance, suggesting that culture may be an important correlate of firm performance. A cultural emphasis on adaptability is associated with revenue growth for 2009-2010 and 2010-2011 and with net income growth for 2009-2010 (Hypothesis 6). Being more customer-oriented is related to revenue growth for 2010-2011, net

income growth for 2009-2010, and to Tobin's Q for 2009 (Hypothesis 7). Having a more results-oriented culture is linked to revenue growth for 2010-2011 but not 2009-2010 (Hypothesis 8). A more detail-oriented culture is positively related to revenue growth for 2010-2011 but negatively associated with revenue growth for 2010-2011 (Hypothesis 9). In addition to associations with financial outcomes, adaptability, transparency and customer-oriented cultures were positively and significantly related to Tobin's Q, a measure of the market's valuation of the firm. Firms whose cultures were more adaptable, more open, and more focused on customers garnered higher stock market valuations.

In addition to assessing performance with financial metrics, Table 3 also shows the effects of culture on employee ratings from Glassdoor and the reputational ratings reported in the *Fortune* Most Admired survey. Cultures that were rated as more adaptable, results-oriented and detail-oriented were seen more positively by their employees. Firms that emphasized adaptability and were more detail-oriented were also more admired by industry observers. Overall, these findings support the argument that organizational culture is associated with consequential firm outcomes.

When the results in Tables 2 and 3 are taken together a clear picture emerges showing that CEO personality is significantly related to organizational cultures: CEOs with a personality that is more open to experience have cultures that emphasize adaptability; CEOs who are more extraverted but less agreeable and more neurotic have more results-oriented cultures; and CEOs who are more conscientious have more detail-oriented cultures. After controlling for CEO personality, different organizational cultures are shown to be importantly associated with subsequent firm performance. Firms with higher financial performance have cultures that place more emphasis on adaptability, results-oriented, detail-oriented, customers, and transparency.

These findings suggest that when a comprehensive assessment of culture is made, and when the sample is homogeneous with regard to industry, there can be direct links between culture and firm performance.

The results in Table 3 for Tobin's Q are particularly revealing since they indicate that the market-to-book value of the company reflects not only the culture of the firm (adaptable, customer-oriented, transparency) but also the personality of the CEO (more extraverted and more open to experience). Similarly, employee ratings of the firm (Glassdoor ratings) also reflect both the culture of the company (e.g., more adaptable and results-oriented) and the personality of the CEO (more open to experience). Thus, while CEO personality is not strongly linked to a firm's financial performance, there are conditions under which external evaluators may take into account the CEO's personality when judging the company. Overall, these results are consistent with a model that suggests that the personality of the CEO is related to the type of culture of the organization, and this, in turn, may be associated with firm performance.

Discussion

In its inception, many scholars suggested that research on organizational culture should provide a critical linkage between firm leadership and organizational performance (e.g., Barney, 1986; Deal & Kennedy, 1982). Unfortunately, that promise has remained largely unfulfilled. Although earlier studies explored the relationships between personality and leadership (e.g., De Hoogh, et al., 2005; Hoffman & Jones, 2005; Judge, et al., 2002), the relationship between CEO personality and firm culture was not well articulated. Using comprehensive measures of both personality and organizational culture, we find that the personality of the CEO is associated in predictable ways with types of organizational culture. For instance, CEOs who are higher on openness to experience are more likely to be associated with cultures that emphasize adaptability

than are those CEOs who are less open to experience. CEOs who are more conscientious have cultures that are more detail-oriented than those who are lower on conscientiousness. These findings may also help explain why some earlier studies of leadership and performance failed to find clear associations (e.g., Lieberson & O'Connor, 1972). Insofar as CEOs influence subsequent firm performance, one likely mechanism is through the organizational cultures they create.

Similarly, previous studies of culture and firm performance have also yielded mixed results, with some studies finding associations between culture and subjective measures of outcomes (e.g., Denison & Mishra, 2005; Fu, et al., 2010; Hartnell, et al., 2010) but with little convincing evidence presented for the effects of culture on consequential outcome measures such as firm financial performance (e.g., Siehl & Martin, 1990). Results presented here help clarify this picture. Our results show strong and consistent relationships between culture and firm outcomes in terms of financial performance, reputation, and attitudes among employees. For example, cultures that are more adaptable are positively linked to revenue and net income growth, Tobin's Q, employee ratings, and *Fortune's* Most Admired ratings. Overall, the results show clear linkages among CEO personality, organizational culture, and firm performance. They also suggest that CEO personality has little direct affect on a firm's financial performance but can affect perceptions of others in the form of how the market and employees evaluate the company (Tobin's Q and Glassdoor ratings).

Although we are unable to investigate the specific mechanisms linking CEO personality to culture and culture to performance, previous research offers insight into how these might be related. First, research has shown that personality, characterized as patterns of thought, emotion, and behavior that are relatively consistent over time and across situations, is strongly associated

with behavioral regularities (e.g., Barrick & Mount, 1991; Judge, et al., 2002). The logic is that personality affects values and motivation which, in turn, affect how people interpret what is important and how to think and behave—the culture of the organization (Barrick & Mount, 2005; Parks & Guay, 2009). At the CEO level, over time these consistent patterns of behavior shape interpretations of what's important and how to behave (O'Reilly & Chatman, 1996; Schein, 1985; Tushman & O'Reilly, 2002).

For example, in exploring these linkages, Peterson (Peterson, et al., 2003) showed that a CEO's personality had predictable effects on how the senior team interacted. They found that senior team cohesion was higher when the CEO was more agreeable and more emotionally stable and that CEOs who were higher on openness had teams that were less risk averse. Although not hypothesized, they also reported that teams characterized as more risk taking and flexible also were in firms that reported higher income growth. In a study of 26 Israeli firms from a variety of industries, Berson, Oreg and Dvir (2008) investigated the associations among three CEO values (self-direction, security, benevolence) and three types of culture (innovative, supportive, bureaucratic). They found that CEOs who valued security had more bureaucratic cultures while those who were more benevolent had more supportive cultures. Using path analysis, they also reported that an innovative culture was related to sales growth, a bureaucratic culture to efficiency (sales per employee) and a supportive culture to more employee satisfaction. Other research has shown that a CEO's personality may affect choices of strategy and structure (Chatterjee & Hambrick, 2007; Miller & Toulouse, 1986). The underlying logic of these studies is that actions of the leader are translated into expectations and attitudes of others in the organization. Our results are also built on this logic.

Given how pervasive the assumptions about CEO leadership, culture and performance are, why has the empirical evidence been so thin? There are several answers to this question. First, while there have been numerous studies (laboratory and field) linking personality and leadership, these have not been conducted at the CEO level where collecting data is more difficult. It is only in the past decade that there has been convergence in the measurement of personality and the development of reliable, valid, and easy to use assessments. Without the Five Factor Model, earlier studies used a variety of personality variables that made it difficult to aggregate findings across studies (e.g., John, et al., 2008). Thus, several early studies of CEO personality were based on more idiosyncratic measures that make it difficult to replicate and generalize (e.g., Miller & Toulouse, 1986). However, while it is difficult to collect personality data on busy CEOs, using personality ratings from employees who are familiar with the CEO offers a possible solution to this problem. By using multiple ratings of the Big 5 dimensions from employees, we were able to get reasonable assessments of the CEO's personality (Mount, et al., 1994).

Second, the linkage between culture and firm performance has been hard to explicate. Part of the reason for this has to do with the definition and measurement of culture. This has been a contentious issue and some earlier studies have been limited by relying on narrow, researcher-imposed frameworks for the measurement of culture that has reduced the opportunity to discover relationships with firm performance (Hartnell, et al., 2011). Third, aside from variations in the measurement of culture, previous studies have used a variety of subjective measures of firm effectiveness (e.g., Denison & Mishra, 1995; Gregory, et al., 2009). These often relied on perceptual measures or judgments of perceived performance, making it difficult to compare across studies.

Compounding these difficulties, many of the studies of culture and performance have used convenience samples of companies in different industries where performance measures may or may not be relevant (e.g., Denison, 1984; Gordon, 1985). For example, Return on Investment (ROI) may vary across industries based on how capital intensive they are. Comparing the ROI of firms in one industry with those in another may give a misleading impression of performance across companies. Studies that attempt to find relationships using heterogeneous samples, especially without careful industry controls, can easily fail to uncover real relationships. We believe that one strength of the present study, and perhaps one reason why we find strong associations of culture and performance, is that we focused narrowly on one industry where the performance metrics had equivalent relevance.

Finally, only a very few studies have actually explored the interrelationships among leadership, culture and performance (Berson, et al., 2008; Peterson, et al., 2003; Siew & Yu, 2004) and these, like the present study, have been forced to rely on comparatively small samples. However, using small samples with narrow measures of culture, subjective performance metrics, and firms from heterogeneous industries does not seem like a successful strategy for investigating these relationships. In the present study we attempt to minimize these weaknesses by using comprehensive measures of personality and culture and focusing on a narrowly defined sample where performance metrics are likely to be comparable and relevant.

Limitations and Future Research Directions

There are several obvious and important limitations to the present study. First, although we have a reasonable number of respondents across firms in the sample, our final sample size is 29 firms, which means that any analyses are of comparatively low power and more subject to misinterpretation than large sample studies. This is both a legitimate cause for caution in

interpreting and generalizing from the results and a fact of life of doing cross-organizational studies that require the participation of senior leaders. The fact that our sample is drawn from the same industry and we use further industry controls may mitigate some of the problems associated with the use of heterogeneous samples in previous studies. Similarly, the use of standardized firm effectiveness measures in the present study may make it easier to compare across future studies.

A second important limitation of the current study has to do with the causality among our variables. Although we were careful to collect outcome data after our assessment of culture, any timing for causation remains ambiguous. Although our argument is that personality of the CEO is likely to precede the culture and that culture affects outcomes, it may be that reverse causation is occurring. For example, cultures of a particular type may act as a screen for CEOs who have certain personalities. However, for a number of our firms, the CEO was also the founder, so the causality in these instances seems clear, but it is possible that boards hire CEOs based on their cultural fit. Similarly, it is also possible that firms with a particular record of performance may end up with characteristic cultures, rather than the opposite. Again, the use of dependent variables that were measured after the culture was assessed may mitigate some of this effect but cannot rule it out. Clearly it will take a more rigorous research design and significant longitudinal data to resolve these issues.

Managerial Implications

Our study generates two important managerial implications. First, the connections between CEO personality, organizational culture and firm performance, suggest that it could be useful for Boards of Directors to consider carefully CEO candidates' personality when evaluating their suitability for the position. Given the importance of aligning culture with

strategy (e.g., Harreld, O'Reilly & Tushman, 2007), boards might select CEO's based on the fit between the CEO's personality and the firm's strategic needs. For example, given equivalent qualifications, firms that have a pressing need to be more results-oriented might desire a candidate who is extraverted and low on agreeableness and neuroticism. Firms that need to be more detail-oriented could prioritize conscientiousness as an attribute in a desirable candidate. CEO's that help cultivate results-oriented and detail oriented cultures will likely enable strong firm performance, in terms of revenue growth and employee attitudes. Though corporate boards have likely taken person attributes into consideration (e.g., Westphal & Zajac, 1995), at least informally, when hiring CEO's, this study offers specific guidance on the types of attributes that are associated with more and less effective organizational cultures. A second implication is relevant to CEO and senior leader behavior and development. CEO's might usefully take note of the connection between perceptions of their personality, which are based at least in part on employees' observations of their behaviors and priorities across various situations, and their organization's culture. Our findings underscore the level of scrutiny that senior leaders are subject to, and therefore how important is for them to be mindful of the impact they have on culture when planning their interactions and behavior (e.g., Tsui et al., 2006). But this study suggests an even more variegated understanding of exactly which personality attributes, manifested in associated behaviors, may cultivate certain types of culture. Senior leaders may want to consider developing the behaviors that cultivate the most useful culture for their firm, even if these behaviors do not come naturally to them. Given the findings from this study, it will be easier to do if their personality is already consistent with the culture they want to create.

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Figure 1
The Big 5 Personality Dimensions

- Extraversion
  - Warmth
  - Friendly
  - Gregarious
  - Assertive
  - Positive affect
  - Energy
  - Optimistic
- Agreeableness
  - Candid
  - Cooperative
  - Compromising
  - Modest
  - Compassionate
  - Trusting
  - Kind
- Conscientiousness
  - Orderly
  - Reliable
  - Achievement oriented
  - Self-disciplined
  - Deliberate
  - Dependable
  - Cautious
- Neuroticism
  - Negative affect
  - Anxious
  - Self-conscious
  - Impulsive
  - Hostile
  - Insecure
  - Guilt
- Openness to Experience
  - Imaginative
  - Insightful
  - Adventurousness
  - Challenge convention
  - Nonconventional
  - Autonomous
  - Resourceful

Figure 2
Organizational Culture Profile Dimensions

- Adaptability
  - Willing to experiment
  - Fast-moving
  - Quick to take advantage of opportunities
  - Taking initiative
  - Risk taking
  - Innovative
- Collaborative
  - Working in collaboration with others
  - Team-oriented
  - Cooperative
  - Supportive
  - Not aggressive
  - Low levels of conflict
- Results-Oriented
  - Being results-oriented
  - High expectations for performance
  - Achievement oriented
  - Not easy going
  - Not calm
- Integrity
  - Having integrity
  - High ethical standards
  - Being honest
- Customer-oriented
  - Being customer-oriented
  - Listening to customers
  - Being market driven
- Detail-oriented
  - Paying attention to detail
  - Being precise
  - Emphasizing quality
  - Being analytical
- Transparency
  - Putting the organization's goals before the unit
  - Individual goals are transparent
  - Sharing information freely

Table 1

Factor Analysis - Rotated Component Matrix

	Components (Factors)						
Factor Number:	1	2	3	4	5	6	7
Factor Name:	Adaptability*	Collaborative	Results-Oriented	Integrity	Customer-Oriented	Detail-Oriented	Transparency
Variance Accounted for:	9.3%	8.3%	7.0%	6.0%	5.0%	4.4%	3.2%
Predictability	0.63	(0.05)	(0.19)	(0.09)	0.05	(0.03)	0.00
Being Innovative	(0.61)	0.05	(0.06)	0.10	0.08	0.01	(0.10)
Being Quick to Take Advantage of Opportunities	(0.51)	(0.17)	0.12	(0.26)	0.17	(0.15)	(0.00)
Being Willing to Experiment	(0.63)	(0.03)	(0.21)	(0.09)	(0.05)	(0.10)	0.04
Risk Taking	(0.66)	(0.23)	0.01	(0.10)	(0.02)	(0.13)	(0.03)
Being Careful	0.66	0.01	(0.29)	(0.12)	(0.05)	0.13	(0.11)
Taking Initiative	(0.50)	(0.05)	0.17	(0.07)	(0.08)	(0.00)	(0.07)
Fast-moving	(0.54)	(0.16)	0.18	(0.33)	(0.18)	(0.11)	(0.06)
Avoiding Conflict	0.44	0.37	(0.23)	(0.15)	(0.14)	(0.14)	(0.16)
Making Your Numbers	0.48	(0.22)	0.35	(0.09)	0.20	(0.19)	0.08
Being Team Oriented	0.04	0.66	0.00	0.06	0.05	0.04	(0.08)
Being Supportive	0.10	0.48	(0.30)	0.12	(0.02)	(0.03)	0.01
Being Aggressive	(0.12)	(0.62)	0.21	(0.26)	(0.10)	(0.10)	(0.12)
Confronting Conflict Directly	(0.17)	(0.51)	0.11	(0.01)	(0.09)	0.18	0.15
Cooperative	0.08	0.59	(0.19)	0.03	(0.08)	(0.11)	(0.05)
High Levels of Conflict	0.18	(0.59)	0.02	(0.37)	(0.14)	(0.03)	(0.00)
Working in Collaboration with Others	(0.02)	0.69	(0.04)	(0.03)	0.08	0.01	0.07
Being Competitive	0.03	(0.41)	0.31	(0.15)	0.11	(0.06)	(0.16)
Being Easy Going	0.22	0.34	(0.52)	(0.08)	(0.18)	(0.12)	(0.14)
Being Calm	0.36	0.25	(0.46)	(0.04)	(0.08)	(0.20)	(0.05)
Action Oriented	(0.19)	(0.11)	0.45	(0.14)	(0.26)	(0.05)	(0.15)
Achievement Oriented	0.10	(0.13)	0.51	(0.05)	(0.14)	(0.10)	(0.05)
Having High Expectations for Performance	(0.16)	(0.07)	0.57	(0.08)	0.01	0.08	0.06
Being Results Driven	0.11	(0.12)	0.63	(0.08)	0.07	0.01	0.05
Having High Ethical Standards	0.10	0.19	(0.12)	0.75	0.08	(0.06)	(0.00)
Being Honest	(0.03)	0.05	(0.07)	0.72	(0.04)	(0.04)	(0.03)
Having Integrity	0.05	0.17	(0.03)	0.78	0.04	(0.05)	(0.00)
Listening to Customers	0.04	0.08	0.01	0.06	0.76	(0.00)	(0.07)
Being Customer Oriented	(0.05)	0.09	(0.03)	0.05	0.77	(0.03)	(0.05)
Being Market Driven	0.14	(0.10)	0.21	(0.16)	0.51	(0.29)	(0.08)
Being Analytical	0.12	0.02	0.10	(0.10)	(0.26)	0.49	0.10
Paying Attention to Detail	0.10	(0.04)	0.01	(0.04)	(0.09)	0.68	(0.11)
Being Precise	0.28	(0.20)	(0.11)	(0.13)	(0.13)	0.52	(0.03)
Emphasizing Quality	0.02	0.01	(0.16)	0.09	0.28	0.51	(0.16)
Sharing Information Freely	(0.09)	0.36	0.01	0.15	(0.06)	(0.08)	0.45
Individual Goals Are Transparent	0.15	(0.09)	0.03	0.07	(0.15)	0.04	0.57
Putting Org's Goals Before Unit's Goals	0.08	(0.05)	(0.14)	(0.16)	0.01	(0.10)	0.58
Being Tolerant	0.23	0.29	(0.36)	0.18	(0.19)	(0.28)	(0.19)
Being Reflective	0.14	0.04	(0.39)	(0.11)	(0.02)	0.12	0.15
Security of Employment	0.11	(0.02)	(0.31)	0.09	(0.21)	0.01	(0.28)
Urgency	(0.20)	(0.23)	0.33	(0.28)	(0.25)	(0.11)	(0.16)
Learning from Mistakes	(0.27)	0.02	0.04	0.12	0.12	0.37	0.24
What You Know Matters More Than Who You Know	(0.16)	(0.02)	0.08	0.25	(0.11)	0.17	0.24

* Note: Items for the factor Adaptability were reverse-scored after factor scores were computed to make interpretation more straightforward.
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 8 iterations.

Table 2

CEO Personality Predicts Culture

Variable \ Culture Factor	**Adaptability**	**Collaboration**	**Results-Oriented**	**Integrity**	**Customer-Oriented**	**Detail-Oriented**	**Transparency**
Software	-0.16	-0.23	0.28	-0.22	0.19	0.38	0.14
HWSW Mix	0.03	-0.80 **	0.62 **	-0.25	0.38	0.65 **	0.27
Log Employees FY 2009	0.04	0.04	0.03	0.05	0.08	-0.07	-0.05
Extraversion	-0.10	-0.01	0.17 *	-0.04	0.07	0.04	0.06
Agreeableness	0.06	0.15	-0.37 **	0.15	-0.14	-0.26	-0.28
Conscientiousness	-0.05	0.28	-0.27	0.39	0.01	0.59 **	0.25
Neuroticism	0.14	-0.07	-0.50 *	0.22	-0.43	0.12	-0.19
Openness	0.50 ***	-0.14	-0.05	-0.17	-0.04	-0.06	0.05
Constant	-0.28	0.19	-0.88	-0.18	-1.14	0.12	0.29
Adjusted r^2	0.39	0.39	0.26	0.00	0.21	0.43	0.00
F-ratio	3.22 **	3.23 **	2.22 *	0.55	1.90	3.59 ***	0.65

**** p<0.10***

***** p<0.05***

****** p<0.01***

Table 3

Culture Predicts Performance

Variable \ Perf'c. Metric	**Revenue Growth 2009-10**	**Revenue Growth 2010-11**	**NI Growth 2009-10**	**Tobin's Q**	**Glassdoor 2010**	**Fortune Most Admired**
Software	0.02	0.02	-2441	3.95 ***	-0.05	21.1 ***
HWSW Mix	0.27	0.07	-1999	3.50 ***	-0.09	21.8 ***
Log Employees FY 2009	0.36 ***	-0.11	1047 *	0.02	-0.07	5.23 **
Log Revenue FY 2009	0.60 ***					
Log Revenue FY 2010		1.08 ***				
Net Income FY 2009			0.81 ***			
Extraversion	-0.04	-0.06	-532	-0.76 **	-0.07	-2.91
Agreeableness	0.06	-0.01	708	-0.01	0.14	3.29
Conscientiousness	-0.12	0.01	1114	0.20	0.02	7.61
Neuroticism	0.02	-0.01	1100	0.02	0.11	6.79
Openness	0.16	0.03	692	1.17 ***	0.21 *	5.34
Adaptability	0.51 **	0.06	812	1.18 ***	0.44 **	15.2 ***
Collaboration	-0.02	0.02	-1649 *	0.52	0.11	-0.36
Results-Oriented	-0.27	0.35 ***	730	-0.87	0.48 **	0.79
Integrity	-0.08	-0.03	2038 **	-0.15	0.35 *	5.18
Customer-Oriented	-0.21	0.16 **	1080	1.03 ***	-0.01	-0.50
Detail-Oriented	-0.24	0.23 ***	2348 **	-0.07	0.35 *	8.54
Transparency	-0.03	-0.05	1985 **	1.84 ***	0.05	-3.88
Constant	0.01	0.43 *	-6197	-0.69	4.01 ***	64.2 ***
Adjusted r^2	0.36	0.08	0.88	0.86	0.33	0.64
F-ratio	25.8 ***	515.7 ***	13.8 ***	11.7 ***	1.91	4.28 ***

**** p<0.10***

***** p<0.05***

****** p<0.01***